S/137/60/000/011/028/043
A006/A001

Roentgenographical Investigation of Surface Cold Hardness Arising During the Turning of Steel

closely connected with the process of the arising of stresses of the second order; if any of the cutting parameters changes, the curves showing the changes of stresses of the first and second order, are almost parallel. The presence of high stresses of the first order in the surface layer can be explained by the considerable strengthening of the latter and the particular nature of the strained state in the layer determined by the penetration of roentgen rays into the metal. This state possesses the nature of oriented stresses of the second order. There are 21 references.

I.K.

Translator's note: This is the full translation of the original Russian abstract.

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32-8-22/61

Utilization of Photometric X-Ray Photograph Curves by the Method of Approximation.

this paper suggests a new method which permits to determine the parameters according to photometric curves. For the contour of the interference band the following expression is obtained $I_1 = I_0 e^{-k^2x^2}$ in the course of calculation the following expression is obtained for the approximation curve; $I'_{1\,max} = 2I_0 e^{-\frac{1}{2}} = 1,22I_0$ and in the case of isosceles-triangle solution $Q'_2 = I_0 \frac{9\sqrt{3}}{8\alpha} = I_0 \frac{1,95}{\alpha}$.

Examples for the application of this method are given and individual cases described. (1 illustration and 1 table).

ASSOCIATION State university in Petrozavodsk.(Petrozavodskiy gosudarstvennyy universitet).

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SHIVRIN, O.N.; MIMUKHIN, B.M.

Anisotropy of second order atomic deformations in the crystal lattice of plastically deformed tungsten, nickel, and aluminum. Izv. vys. ucheb. zav.; fiz. no.3:135-140 '58. (MIRA 11:9)

1. Petrozavodskiy gosuniversitet.
(Metal crystals) (Metallography)

68034

SOV/155-58-6-36/36

~~24(4)~~ 24.7200

AUTHOR: Shivrin, O.N.

TITLE: On the Estimation of the Characteristics of the Mosaic Structure of Polycrystals With Respect to the Intensity of X-ray Reflections

PERIODICAL: Nauchnyye doklady vysshey shkoly.Fiziko-matematicheskiye nauki, 1958,Nr 6,pp 225-230 (USSR)

ABSTRACT: The author reports on the measurement of the intensity of X-ray reflections on coarse- and fine-grained tempered steel 45. Test pieces after heat treatment of two kinds are used : 1.) After a water hardening with 900° there took place an annealing at 700° for 1 hour.

2.) The annealing took place under 920° for 1.5 hours. By comparing the experimental and theoretical values of the atomic dispersion it was stated that the variation of the intensity of the images compared with the ideal mosaic crystal was caused by the effect of the secondary extinction in both cases. The mosaic constant $g = (2\sqrt{\pi}\,\Delta)^{-1}$ characterizing this effect was calculated from the experimental data in both

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On the Estimation of the Characteristics of the Mosaic Structure of Polycrystals With Respect to the Intensity of X-ray Reflections SOV/155-58-6-36/36

cases. It was shown that the perfection of the crystallites is somewhat smaller in coarse-grained steel than in fine-grained steel.
V.I. Iveronova, B.Ya. Pines and E.F. Chaykovskiy are mentioned.

There are 1 figure, 1 table, and 14 references, 9 of which are Soviet, 3 English and 2 Czech.

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet (Petrozavodsk State University)

SUBMITTED: September 29, 1958

Card 2/2

AUTHOR: Shivrin, O.N.

TITLE: Influence of Extinction on the Intensity of the Rear Lines of X-Ray Diffraction Patterns of Metals Deformed in the Cold State (O vliyanii ekstinktsii na intensivnost' zadnikh liniy rentgenogramm kholodnodeformirovannykh metallov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 4, pp 682-685 (USSR)

ABSTRACT: A change in the intensity of the rear lines of X-ray diffraction pictures were investigated for copper, brass L-62, commercial aluminium (deformed by static compression). The specimens were cylindrical of 10 mm dia, 15 mm height (copper and brass) and 20 mm dia, 30 mm height (for aluminium). Prior to deformation, the copper specimens were annealed at 400°C for two hours, the brass specimens were annealed at 450°C for one hour and the aluminium specimens were annealed at 400°C for one hour. The cooling was effected in the furnace with a speed of 40°C/hr. The X-ray exposures were made by means of CuK_α radiation, whereby the average error did not exceed 1 to 2%. The obtained results are graphed

Influence of Extinction on the Intensity of the Rear Lines of X-Ray Diffraction Patterns of Metals Deformed in the Cold State

in Figs.1 and 2 and it can be seen that the intensity of the lines (331), (420) for copper and brass is lower in the non-deformed state than after deformation. The highest intensity is observed for low degrees of deformation; with increasing deformation the intensity decreases but will still remain higher than for the annealed specimen. This dependence confirms the assumption that extinction has an influence on the intensity of the rear lines. In similar experiments with aluminium, Fig.2, a monotonous increase was observed of the intensity of the lines (422), (511) in the entire interval of the change of the residual deformations. Experiments were also made on 30 x 10 mm disc-shaped specimens of the Steel 45, which were first subjected to recrystallisation annealing at 850°C for two hours and, following that, the disc plane was polished by hand with an emery paper and in some cases additionally with a fabric wheel; the results

Influence of Extinction on the Intensity of the Rear Lines of X-Ray Diffraction Patterns of Metals Deformed in the Cold State

are graphed in Fig.3. Removal of the work hardened layers from such specimens produced an appreciable reduction in the intensity of the line (220) which ceased altogether at a depth of 50μ from the surface. The obtained results indicate that, in the case of various materials and various conditions of deformation, the secondary extinctions have a considerable influence on the intensity of the rear X-ray diffraction lines. Weakening of this influence as a result of fragmentation of blocks during cold deformation leads to a strengthening of the intensity of these lines, as a result of which information on Type III distortions will prove erroneous. Therefore, it is necessary to treat with caution results of work relating to determination of Type III distortions in which the

Influence of Extinction on the Intensity of the Rear Lines of X-Ray Diffraction Patterns of Metals Deformed in the Cold State

influence of extinction has not been taken into consideration. There are 3 figures and 6 Soviet references.

ASSOCIATION: Petrozavodskiy Gosudarstvennyy Universitet (Petrozavodsk State University)

SUBMITTED: 28th January 1957.

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SHIVRIN, O. N.

SOV/126-6-4-28/34

AUTHOR: Shivrin, O.N.

TITLE: Discussion on V.M.Finkel's Paper on "Crystal Lattice Distortions in Coarse and Fine Grained Steel During Cold Plastic Deformation" (Fizika Metallov i Metallovedeniye, 1956, Vol 2, Nr 1, p 189) (Po povodu stat'i V.M.Finkelya "Iskazheniya Kristallicheskoy Reshetki Krupno- i Melkozernistoy Stali Pri Kholodnoy Plasticheskoy Deformatsii")

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 4, pp 757-760 (USSR)

ABSTRACT: It was reported by Finkel' that in a wide range (80%) of plastic deformation the intensity of the (310) lines (Co-radiation) of coarsely grained steel remained practically constant. Under the same conditions, the intensity of the (211) lines (Cr-radiation) was 1.4 times higher, but also did not depend on the degree of the plastic deformation. While granting that this fact is of great practical interest, O.N.Shivrin disagrees with Finkel's interpretation of his experimental results and points out that: (i) It has been shown (Ref.1, 2) the

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Discussion on V.M.Finkel's Paper on "Crystal Lattice Distortions in Coarsely and Finely Grained Steel During Cold, Plastic Deformation"

process of block fragmentation which causes weakening of the extinction effect practically ceases at 8-10% deformation; with increasing deformation one should expect a decrease of the line intensity as a result of the formation of distortions of the III-rd type. Such an effect was in fact observed by Shivrin in the case of steel 2 deformed by turning at high rates of feed and small depth of the cut, and in the case of brass and copper under hydrostatic pressure: In every case the intensity of lines increased up to a certain degree of deformation only. (ii) Since the intensity of the diffraction background is associated with the magnitude of the distortions of the III-rd type, but not with the extinction effect, the fact of its remaining constant during deformation of coarsely grained metal is quite incomprehensible. No matter how strong is the masking effect of extinction on the weakening of the intensity of the lines due to

Discussion on V.M.Finkel's Paper on "Crystal Lattice Distortions in Coarsely and Finely Grained Steel During Cold, Plastic Deformation"

distortions of the 111-rd type, the magnitude of which should be considerable at 80% deformation, their effect should be reflected in the variation of the background intensity. This, for some reason or other, was not observed by Finkel'. (iii) Block fragmentation results in (a) weakening of the primary extinction effect which is directly associated with the size of the blocks, and indirectly in (b) weakening of the secondary extinction effect due to the increase of the degree of disorientation of the blocks within the crystallites. This means that a metal can be characterised by coarsely grained structure and still not show any secondary extinction effect if only the structure of the crystallites is sufficiently close to the ideal, and that the secondary extinction effect can be considerable even in finely grained metals if only the degree of disorientation of the blocks within each crystallite is sufficiently small. The character of the variation of the line intensity will depend on whether the primary or secondary extinction only, or

Discussion on V.M.Finkel's Paper on "Crystal Lattice Distortions in Coarsely and Finely Grained Steel During Cold, Plastic Deformation"

both these effects take place in a polycrystalline metal specimen. It is easy to show that, as was postulated by Averbach (Ref.3, 4) in the presence of primary extinction only, the variation of the intensity of the lines of high orders is negligible. (This fact, for some reason or other, is overlooked by Finkel'.) On the other hand, the presence of secondary extinction (Ref.5, 6), particularly when the conditions are favourable for the formation of texture (Ref.7), the variation of the lines intensity can be quite different. For this reason Finkel's contention that the observed effect was caused exclusively by the secondary extinction is not quite justified, since in the case under consideration the effect of texture might have been the predominant factor. (iv) The difference (not much larger than the limit of the experimental error) of the values of $\sqrt{u^{-2}}$ in the (310) and (211) directions can be attributed not only to the anisotropy of the distortions of the III-rd type, but also to the

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Discussion on V.M.Finkel's Paper on "Crystal Lattice Distortions in Coarsely and Finely Grained Steel During Cold, Plastic Deformation"

difference between the depth of penetration of the Co- and Cr-radiation. Some authors favour the hypothesis of the weakened surface layer in which small distortions are neutralised. In the final analysis the correctness of this or other theory can be proved only by further experimental work. There are 9 Soviet references.

ASSOCIATION: Petrozavodskiy Gosuniversitet (Petrozavodsk State University)

SUBMITTED: 28th January 1957.

Reply by V.M.Finkel' states the following:

In spite of the "coarsely" and "finely" grained structure of the experimental steels, the size of the regions of coherent dispersion in steel 3 did not exceed 1.7×10^{-5}cm at 2% deformation and 1.1×10^{-5}cm at 4% deformation. In the case of the heat-treated rail steel, the size of the mosaic blocks was smaller by one order of magnitude (e.g. 2×10^{-6}cm at 10% deformation).

Reply by V.M.Finkel'

Consequently, the observed phenomena cannot be attributed to the effect of primary extinction in either case since primary extinction is practically non-existent at the size of the regions of coherent dispersion quoted above. (Ref.3, 4). To account for the stability of the intensity of the (310) lines, one has to assume that its decrease due to the effect of micro-distortions of the 111-rd type is counter-balanced by an opposite effect of some other physical factors, such as secondary extinction and texture. The secondary extinction can, in all probability, display itself throughout the whole deformation range: In its initial stages it is associated with the process of block fragmentation and the resulting disorientation of the mosaic blocks, in the later stages it is caused by the process of disorientation not directly connected with the block fragmentation (Ref.5). Unlike secondary extinction, the effect of primary extinction (in a coarsely grained aggregate), being associated with the process of fragmentation only, probably disappears in the initial

Reply by V.M.Finkel'

stages of the deformation (having increased the intensity of the lines), after which the intensity of the lines decreases due to the effect of the distortions of the III-rd type. Shivrin carried out his experiments on brass and copper in which the size of the mosaic blocks is one or two orders of magnitude larger than that in steel, so that the maximum on his curves is obviously associated with the effect of the primary extinction. When a high carbon content steel is quenched, a structure is obtained which is submicroscopically nonhomogeneous, and which is characterised by small size of the blocks and high degree of their disorientation. This minimises or possibly even eliminates secondary extinction, which would explain the different character of the variation of the lines intensity with deformation in annealed and quenched specimens of steel 3. He (Finkel) did not take into account the effect of texture, since this effect in the case of plane (310) is negligible (Ref.7). In addition, had the observed phenomena been attributed to the effect of texture only, it would imply that the character of the texture in

Reply by V.M.Finkel'

steel 3 and rail steel is basically different (since in the former case $l_{(310)}$ is constant and $l_{(211)}$ increases with increasing degree of deformation, while in the latter case both $l_{(310)}$ and $l_{(211)}$ decrease) which, of course, cannot be true. It is difficult to understand why Shivrin should be surprised by the fact that the background intensity in deformed steel 3 did not change: The variation of the background intensity in the high carbon content rail steel did not exceed 7-8%. It is only to be expected that it should amount to less in the case of steel 3 in which, owing to its low carbon content, the lattice distortions caused by deformation are much smaller than those in steel 3. Since the variation of the background intensity is generally small it cannot be used as a practical criterion of the degree of lattice distortion. As regarding Shivrin's comments on the problem of anisotropy, the hypothesis of the weakened surface layer does not seem to have any bearing on this problem: Unstable,

Reply by V.M.Finkel'

elastic distortions may be present in the surface layer, while distortions of the III-rd type are of non-elastic nature. There are 9 Soviet references.

ASSOCIATION:Sibirskiy Metallurgicheskiy Institut (Siberian Metallurgical Institute)

SUBMITTED: 1st April 1957.

Comments of O.N.Shivrin on the Reply of V.M.Finkel'

(i) In his reply Finkel' gives the dimensions of the mosaic blocks of the investigated materials which were not given in his original paper. The quoted figures do, in fact, exclude the possibility of the intensity of the (211) and (310) lines being affected by primary extinction, but then he (Shivrin) did not assert that such an effect was possible. On the contrary, he emphasized that secondary extinction is not directly associated with the size of the blocks and that such a

Comments of O.N.Shivrin on the Reply of V.M.Finkel'

direct connection exists in the case of the primary extinction only. (ii) The data on the size of the blocks given by Finkel' are not reliable. If the quoted size of the blocks in quenched and tempered rail steel deformed 10% is in fact $D = 3.8 \times 10^{-7}$cm then the width of the lines (310) calculated from the Selyakov formula is $B = 0.285$ radion or 16°. This broadening is supposed to be due to the small size of the blocks only, without taking into account the effect of the distortions of the II-nd type. Under these conditions the (310) lines would disappear completely and one could not discuss the variation of their intensity. This proves that the quoted data on the size of the blocks are incorrect. (iii) The assumption that secondary extinction diminishes throughout the whole deformation range cannot be regarded as well substantiated, since increasing disorientation of the blocks leads to its rapid disappearance. (iv) The increase of the lines intensity observed in brass and copper cannot be attributed to the effect of primary extinction since this effect is negligible

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Comments of O.N.Shivrin on the Reply of V.M.Finkel

already at the size of the blocks equal to 1 x 10^{-4}cm. In the case under consideration the size of the blocks was 4 x 10^{-5}, 0.9 x 10^{-5} and 4 x 10^{-6}cm at 2, 5 and 20% deformation, respectively. (v) Finkel's statement that the character of texture in the rail steel and in steel 3 cannot but be the same, has not been questioned. However, it should be borne in mind that even small additions of alloying elements can affect the character of texture formation (Ref.12). Finkel's explanation of the variation of the lines intensity, based on the assumption that it is due to secondary extinction only

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Comments of O.N.Shivrin on the Reply of V.M.Finkel'

is not very convincing. There are 12 references of which 8 are Soviet and 4 English.

ASSOCIATION: Petrozavodskiy Gosuniversitet (Petrozavodsk State University)

SUBMITTED: 10th April 1957.

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SHIVRIN, O.N.

Independent calibration for measuring the intensity of interference lines in the KROS-1 camera. Zav. lab. 24 no.5:645 '58. (MIRA 11:6)

1. Petrozavodskiy gosudarstvennyy universitet.
(X-ray spectroscopy)

18(7), 24(6) SOV/139-59-1-23/34

AUTHORS: Shivrin O.N., Shatin V.S.

TITLE: X-Ray Study of the Softening of Plastically Deformed Steel During Temperature Relaxation (Rentgenograficheskoye izucheniye protsessa razuprochneniya plasticheski deformirovannoy stali pri temperaturnom otdykhe)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika, 1959, Nr 1, pp 128-135 (USSR)

ABSTRACT: Softening of plastically deformed steel St.45 during temperature relaxation has been studied by means of X-rays according to the diffuseness of interference lines. Specimens of this steel were disc shaped, 15 mm diameter and 5 mm long. After heat treatment (quenching from 850°C in oil and tempering at 700 °C for one hour) the specimens were deformed up to 50% in compression. The heavily deformed surface layer was removed by etching in a mixture of HNO_3 and HCl; it was found that the structural distortions were the same throughout each specimen. The specimens were relaxed in a tubular furnace at 300, 350, 400 and 450 °C by soaking for a period of from 10 minutes to 20 hours, depending on temperature. The specimens were X-rayed in the direction of their ends in a cylindrical chamber of

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X-Ray Study of the Softening of Plastically Deformed Steel During Temperature Relaxation

57.3 mm diameter in an Fe-irradiation with an Mn filter. In order to obtain narrower lines, a specially made slit diaphragm, 0.15 mm high, was used instead of the usual diaphragm assembly, which was placed directly on the drum of the chamber. This enabled the focusing of the line to be considerably improved and the exposure time to be shortened. The conditions of focusing assumed the form $\alpha = \psi$, where α is the angle between the surface of the section and the primary beam, and ψ is the angle of slip. Each specimen was exposed twice at $\alpha = 72^{\circ}$ for the focusing of the line (22). From the results obtained the magnitude of secondary distortion $\Delta d/d$ and the block size D were obtained by the Kurdyumov-Lysak method, (Refs 13 and 14). For relaxation at 450° a harmonic analysis of the line (22) was also carried out. Parallel with the X-ray study, Rockwell H_{R_C} hardness tests were carried out. The dependence of D, $\Delta d/d$ and H_{R_C} on the duration of relaxation for a temperature of 400 °C is graphically shown in Fig 1, and for the temperatures 450, 350 and 300 °C it is shown

X-ray Study of the Softening of Plastically Deformed Steel During Temperature Relaxation

in Tables 1, 2 and 3. In the second and third columns of the table, the magnitudes of the true widths of the lines (110) and (220) are shown, and in the fourth column the ratio β_{220}/β_{110} is given, which must lie within the limits of $\beta_{220}/\beta_{110} = 2.93$ and $\beta_{220}/\beta_{110} = 5.97$, depending on the relationship between the "block" and "micro-deformation" diffuseness of the lines; and in columns 5, 6 and 7 values for D, $\Delta d/d$ and H_{R_C} are given. The dependence of D, $\Delta d/d$ and H_{R_C} on temperature at a constant time of relaxation (one hour) is shown in Fig 2. As a result of the above investigations the authors have arrived at the following conclusions: (1) In the process of softening of plastically deformed steel St.45 a constant increase in the size of blocks D and a fall in the magnitude of distortions $\Delta d/d$ with increase in duration and temperature of relaxation is observed. (2) A similar relationship has been established for the values of D and $\frac{\sqrt{\Delta L_o^2}}{L_o}$ which have been found by harmonic

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X-Ray Study of the Softening of Plastically Deformed Steel During Temperature Relaxation

analysis. A comparison of these magnitudes with those of D and $\Delta d/d$, which are obtained by the Kurdyumov-Lysak method, shows satisfactory agreement. (3) the constancy of the magnitude of the "Regions of uniformity" L_0 in isothermal relaxation and the absence of any crushing of blocks both at isothermal and isochronic relaxation allows the deduction that removal of secondary distortions is not accompanied either by unbending of blocks or by plastic slipping, to be confirmed. Removal of distortions in this case can occur by increase of those regions of the metal, the lattice of which is not distorted, and hence by a decrease of the regions of distorted lattice. (4) Testing the hardness, which constantly decreases during relaxation, has enabled its linear dependence on

Card 4/5 $\sqrt{\frac{\Delta d}{d}} \frac{1}{D}$ to be established; thus, there exists a

X-Ray Study of the Softening of Plastically Deformed Steel During Temperature Relaxation

relationship between the characteristic of hardening and the characteristics of submicro-non-uniformity of the hardened metal.

Card 5/5 There are 3 figures, 3 tables and 22 references, 18 of which are Soviet and 4 English.

ASSOCIATION: Petrozavodskiy Gosuniversitet
(Petrozavodsk State University)

SUBMITTED: April 21, 1958

18 (7)

AUTHORS: Potakhin, N. Ye., Shivrin, O. N. SOV/163-59-2-33/48

TITLE: The Method of the Fourier Analysis of Interference Lines Blurred by Distortions and the Dispersity of Blocks (K metodike Fur'ye-analiza interferentsionnykh liniy, razmytykh za schet iskazheniy i dispersnosti blokov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 2, pp 186-188 (USSR)

ABSTRACT: The solution of some problems, e.g. the investigation of the anisotropy of distortions in different crystallographic directions, is only feasible by an analysis of one line. B. Ya. Pines (Ref 1) suggested methods of approximation for this case to separate the distortion effect and the block effect (determination of the coefficients A_t^d and A_t^{bl}). One of these methods presupposes isomeric blocks so that the dependence of the coefficient A_t^{bl} on t becomes linear with the angle coefficient $\frac{-dA_t^{total}}{dt}\Big|_{t=0}$. For the graphic determination of

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this differential quotient, the authors suggested, in a previous paper (Ref 2), a "secant method" in which additional values of A^{total} are computed for t between 0 and 1, and the tangent on the curve $A_t^{total}(t)$ is replaced at t = 0 by a secant which goes through t = 0, t = 0.1 or t = 0.2. In this paper, a new approximation is suggested. Under the assumption of isomeric blocks, a series is derived: $f(t) = a + Bt - aBt^2 + \ldots$ As the coefficients a and B have the order of magnitude $n.10^{-2}$, the linear terms $f(t) = a + Bt$ $\left(a = \frac{dA_t^{total}}{dt}\Big|_{t=0}\right)$ are sufficient for practical purposes. B is the angle coefficient determining the relative microdeformation of the ξ-lattice:

$B = k\xi^2$, $\xi = \frac{\sqrt{\overline{\Delta L_o^2}}}{L_o}$. k is a constant factor the value of

Card 2/3 which can be computed from formulas (91) and (92) indicated by

The Method of the Fourier Analysis of Interference Lines Blurred by Distortions and the Dispersity of Blocks

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B. Ya. Pines (Ref 1). The method suggested was experimentally checked on steel with the radiation Cr - (211), Fe - (220), Co - (310) and Mo - (651, 732). A diagram shows the function f(t) for different ε. The condition of linearity is well satisfied in the range $0 \leq t < 1$. A table compares the values of ε found by the secant method and by the new method. The maximum difference is 8%. Therefore, the method suggested can be used for the determination of the amount of distortion of the lattice. There are 1 figure, 1 table, and 3 Soviet references.

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet (Petrozavodsk State University)

SUBMITTED: June 2, 1958

Card 3/3

SHIVRIN, O.N.

Anisotropy of distortions of the second type in plastically deformed steel. Izv. vys. ucheb. zav.; fiz. no.4:72-76 '59.
(MIRA 13:3)

1.Petrozavodskiy gosuniversitet.
(Steel) (Deformations (Mechanics))

18 (7), 24 (4)
AUTHOR: Shivrin, O. N. SOV/32-25-5-13/56

TITLE: Investigation of the Surface Cold Hardening With the X-ray Photography Method by Means of the Diagonal Cut (Issledovaniye poverkhnostnogo naklepa metodom rentgenografirovaniya po kosomu srezu)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 5, pp 560-561 (USSR)

ABSTRACT: Investigations of the surface structure after cold hardening are usually carried out by taking off thin metal layers in the electrolytic or chemical way, and the metal structure is examined by roentgenography. This method has the disadvantage that the preceding metal layer is always destroyed and no general picture of the structural changes can therefore be considered. The diagonal cut method allows repeated measurements on the same sample and is widely used for investigations of the surface hardening for the determination of microhardness (Ref 1). In the case under review the last mentioned method was applied with some modifications to roentgenographic investigations of the surface hardening that occurs on turning steel 45 and brass L 62. The cut was made under a small angle (1°), and the cut surface on the steel

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Investigation of the Surface Cold Hardening With the X-ray Photography Method by Means of the Diagonal Cut

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was first polished with aluminum oxide and with GOI pastes afterwards. On the brass samples the cut surfaces were prepared by milling and subsequent polishing. Roentgenograms were taken along the cut surfaces with the 1-KROS camera. Measuring results of the variation of the line width (211) of ferrite on steel samples 45 which were turned at different cutting speeds (Fig 1) show the thickness of the hardened layer to be always larger than 0.5 mm. The distribution of microdeformations in the surface layers of brass (Fig 2) differs from the one on steel, which is explained by phase transformations at higher cutting speeds (i.e. higher temperature). There are 2 figures and 2 Soviet references.

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet (Petrozavodsk State University)

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18.8100,18.9200

77703
SOV/148-60-1-32/34

AUTHORS: Shivrin, O. N., Teplitskaya, E. L.

TITLE: X-Ray Scattering in Deformed Tungsten

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, Nr 1, pp 180-182 (USSR)

ABSTRACT: Continuing their previous studies (Izvestiya VUZ MVO, Fizika, in print) in which the structure of powdered tungsten had been investigated using copper radiation, hardly suitable for the detection of "3d-type distortions" (Abstracter's Note: No definition is given; the expression is likely to mean rotation twinning in deformed crystals), the authors carried out additional experiments using shortwave Mo radiation. The X-ray diffraction photographs of tungsten powder, compressed into plates, were taken with camera RKE at 25 and 40° angles between the plates and incident beam. Four photographs were taken from either position. The mean diffraction intensities from eight reflecting planes,

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X-Ray Scattering in Deformed Tungsten

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the sums ofsquared indices of which were 6, 8, 10, 14, 18, 26, 30, and 38, furnished the experimental values of atomic scattering functions f_{exp}. The values were close to f_T, computed according to Thomas-Fermi, except for those f_{exp} obtained from low-index reflecting planes. In the latter case, the somewhat decreased experimental values, and lower f_{exp}:f ratio (see Fig. 1) are an effect of primary extinctions. The ratio is close to 1 when the crystals are parted into blocks whose $D = 5 \cdot 10^{-5}$ cm. "3rd-type distortions" would have decreased the ratio with the increased Miller indices of the reflecting planes. Since this is not the case, the experiments with Mo radiation confirm the authors' earlier conclusion that no "3rd-type distortions" occur in powdered tungsten. There is 1 figure; and 9 references, 5 Soviet, 2 U.K. 1 U.S., 1 Czechoslovakian. The U.K. and U.S. references are: R. I. Weiss, Proc. Phys. Soc., B 65, 391, 553, 1952; A. R. Lang, Proc. Phys. Soc., B 66, 408, 1003,

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X-Ray Scattering in Deformed Tungsten

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1953; R. W. James, Optical Principles of the Diffraction of X-Rays, MacMillan, N. Y.

ASSOCIATION: Petrozavodsk State University (Petrozavodskiy gosudarstvennyy universitet)

SUBMITTED: October 27, 1958

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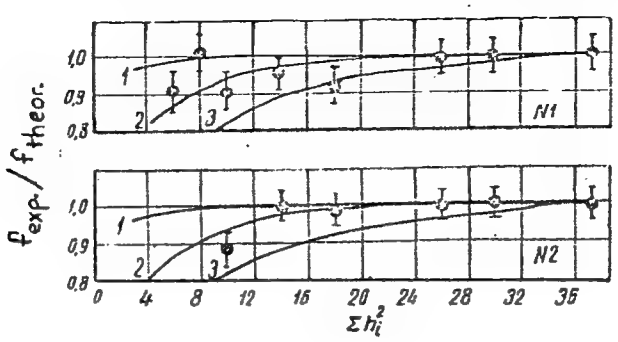

Fig. 1. Comparison of the experimental data with those computed theoretically and corrected for primary extinction according to the Darwin equation. (1) $D = 1 \cdot 10^{-5}$; (2) $D = 5 \cdot 10^{-5}$; (3) $D = 1 \cdot 10^{-4}$ cm.

S/170/60/003/005/015/017
B012/B056

AUTHOR: Shivrin, O. N.

TITLE: The Problem of the Macrohomogeneity of Microdeformations and the Existence of a Weakened Surface Layer

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 5, pp. 131-135

TEXT: In the present paper, the influence exerted by a weakened surface layer upon the character and the size of microdeformations, as well as the influence exerted by the size of metal grains was investigated. The difference in granularity was attained by means of a corresponding heat treatment. In the first part of the paper, the heat treatment of samples of the grade steel ст.20 (st. 20), their preparation for the experiments, and the experiments themselves are described in brief. The second part contains the results, which are discussed. It is shown that neither in coarse- nor in fine-grained steel of the grade investigated, any influence could be found to be exerted by the weakened surface layer on disoriented macrodeformations (that would have led to a macrohomogeneity of the microdeformations). The experiments also showed that the microstructure exerted

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a very slight influence upon the dependence of the disoriented micro-deformations upon the crystallographical direction. It is pointed out that this is in accordance with the fact that the anisotropy coefficients are independent of the degree of deformation, which had been shown to exist in the papers of Refs. 9, 13. It is declared with some caution that the anisotropy coefficients are rather universal, and are constant for the material concerned. There are 3 tables and 13 references: 12 Soviet and 1 British.

√B

ASSOCIATION: Gosudarstvennyy universitet, g. Petrozavodsk
(State University, Petrozavodsk)

S/070/60/005/005/025/026/XX
E132/E160

AUTHOR: Shivrin, O.N.

TITLE: On the Applicability of the Corrective Formulae for Primary and Secondary Extinction

PERIODICAL: Kristallografiya, 1960, Vol.5, No.5, pp.797-800

TEXT: The nature of the mosaic structure of crystals is often determined from the extinction effects which occur. The commonest technique is to use a correction formula giving the dependence of $I_{obs.}/I_{calc.}$ on $\sin\vartheta/\lambda$. Various formulae are used and these are not all the same. The differences between them are discussed. For primary extinction there are expressions due to Darwin, Ekstein-Weiss-Lang and Wilchinsky. However, the latter two are thought to be no improvement on the earlier formula of Darwin. For secondary extinction there are formulae by Hall and Williamson, Weiss and Lang. The use of Hall and Williamson's formula (Ref.4), the simplest, is recommended. All are, however, related to the original formula of Darwin.
There are 10 references: 5 Soviet and 5 English.

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet
(Petrozavodsk State University)

SUBMITTED: [illegible]

Card 1/1

S/126/60/010/004/013/023
E111/E452

AUTHORS: Shivrin, O.N. and Gerasimova, L.M.

TITLE: Structural Disturbances Producing Changes in the Intensity of X-Ray Interference

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.4, pp.586-589

TEXT: The authors note that interference intensity is sometimes more influenced by extinction effects associated with fine mosaic structure than by static atomic displacement (called "type-III disturbances"). In continuous polycrystalline specimens, texture also has an effect which has led to many investigations being carried out on powders. However, such investigations cannot solve important problems relating to continuous specimens, e.g. in which structural disturbances are responsible for metal strengthening in plastic deformation. Their present brief work (for Shivrin a continuation of previous investigations - Refs.3,5) deals mainly with continuous specimens, especially the development of techniques to give reliable results. It had been concluded (Ref.3) that for deformed steel, copper, brass and aluminium, secondary extinction predominates in the annealed state. To check this an annealed

S/126/60/010/004/013/023
E111/E452

Structural Disturbances Producing Changes in the Intensity of X-Ray Interference

steel was investigated with a view to quantitative treatment of extinction. One specimen (of type 45 steel) was heat-treated to give a fine-grained, and another to give a coarse-grained structure. Patterns were obtained with filtered Co K_α radiation. The ratio of the theoretical to the experimental integral intensity is plotted against the value of the specific reflecting capacity. A linear relation was found for both specimens (Fig.1) indicating absence of primary extinction. Block disorientation was calculated from these graphs. Results differ from those of V.I.Ivernova et al.(Ref.12). A material very different from those previously studied is tungsten. The authors'attempt to study monolithic specimens failed. The results for various powder sizes agree well (Fig.2) with those calculated by Darwin's equation. The absence of type-III disturbances is attributed to the exceptionally high brittleness of tungsten. There are 3 figures and 12 references: 7 Soviet, 4 English and 1 in Acta cryst.

Card 2/3

S/126/60/010/004/013/023
E111/E452

Structural Disturbances Producing Changes in the Intensity of X-Ray Interference

ASSOCIATION: Petrozavodskiy gosudarstvennyy universitet
(Petrozavodsk State University)

SUBMITTED: July 25, 1959 initially
January 18, 1960 after revision

Card 3/3

SHIVRIN, O.N.

Anisotropy of crystallites above the elastic limit. Fiz. met. i metalloved. 10 no.4:638-639 O '60. (MIRA 13:11)

1. Petrozavodskiy gosudarstvennyy universitet.
(Metal crystals) (Anisotropy)

SHIVRIN, O. N., Cand. Phys-Math. Sci. (diss) "Crystal Structure of Deformed Metals." Moscow, 1961, 13 pp. (Moscow State Univ.) 150 copies (KL Supp 12-61, 254).

SHIVRIN, O.N.

Mosaic structure of metallic polycrystals and extinction effects.
Part 1. Izv.vys.ucheb.zav.; fiz. no.1:115-123 '61. (MIRA 14:7)

1. Petrozavodskiy gosudarstvennyy universitet.
(Metal crystals) (Crystal lattices)

SHIVRIN, O.N.

Changes in the mosaic structure of metals as a result of relaxation and recrystallization. Fiz. met. i metalloved. 12 no.1:125-131 Jl '61. (MIRA 14:8)

1. Petrozavodskiy gosudarstvennyy universitet.
(Metallography)

KUZNETSOV, A.V.; SHIVRIN, O.N.

Mutual interference on X rays reflected by different mosaic blocks in a crystallite. Kristallografiia 7 no.1:134-136 Ja-F '62. (MIRA 15:2)

1. Petrozavodskiy gosudarstvennyy universitet.
(X-ray crystallography)

S/857/62/000/029/002/003
E193/E383

AUTHORS: Shivrin, O.N. and Teplitskaya, E.L.

TITLE: Structural defects in steel tested at stresses higher than the fatigue limit

SOURCE: Leningrad. Inzhenerno-ekonomicheskiy institut. Trudy. no. 29. 1962. Primeneniye rentgenovykh luchey k issledovaniyu materialov. 155 - 160

TEXT: According to some workers (e.g. Ye.A. Mamontov - Uch. zap. Len. gos. ped. in-ta im. Gertsena, v.125, 31, 1956), a sharp decrease in the intensity of X-ray diffraction can be taken as an indication that the metal has been stressed beyond the fatigue limit. This view, however, has not been supported by the results of some recent investigations (A. Kokhanovskaya - Chekhoslovatskiy fizicheskiy shurnal, 4, 3, 381, 1954) and this has prompted the present authors to study this problem in greater detail. Experimental work was conducted on a steel containing 0.16% C, 0.02% Si, 0.3% P, 0.54% S and 0.34% Mn. Standard, rotating-beam type fatigue test pieces with a notch (5 mm wide, 0.5 mm deep) were used; they were given a preliminary annealing treatment of 2 hours

...nditions
...rficient). Results:
...atigue limit was not
...of defects of the second type. The

Card 1/3

only noticeable effect was misalignment of blocks indicated by tangential blurring of the spots on the Laue-back-reflection patterns and by weakening of the secondary extinction effect for reflections with high values of Q/μ . No significant distortions of the third type were observed in steel tested above the fatigue limit; this, however, could be attributed to the highly localized nature of fatigue and the impossibility of locating the region of maximum distortion. There are 2 figures and 1 table.

ACCESSION NR: AP4025091 S/0139/63/000/006/0095/0098

AUTHORS: Zazovskaya, I. A.; Shivrin, O. N.

TITLE: Mosaic structure of metallic polycrystals and extinction effects. 2

SOURCE: IVUZ. Fizika, no. 6, 1963, 95-98

TOPIC TAGS: extinction effect, microgranular tungsten, x-ray irradiation, coarse powder, radiography, diffractometer, coherence domain

ABSTRACT: The extinction effect in coarse and microgranular tungsten powder under copper and molybdenum x-ray irradiation was studied. The coarse powder averaged 0.2-0.25 mm in size, whereas the fine specimen had a mean size of 10 μ. Plane specimens were prepared from both types of powders with BF-2 bond, and the radiography was carried out on diffractometer URS-50-I in filtered copper and molybdenum. The measurements indicate that the coherence domain dimensions, evaluated from primary excitation effects, decrease with a decrease in radiation wave length. Measurements on the microgranular powder, however, show a very weak extinction from both Cu- and Mo-radiations, and even with a nonuniform coherence domain the results do not show the expected values. Hence, only a general

Card 1/2

ACCESSION NR: AP4025091

qualitative argument is established on the optical nature of the coherence domain. Orig. art. has: 4 figures.

ASSOCIATION: Petrozavodskiy gosuniversitet (Petrozavod State University)

SUBMITTED: 12Jun62	DATE ACQ: 14Feb64	ENCL: 00
SUB CODE: PH	NO REF SOV: 007	OTHER: 001

Card 2/2

VANICHEVA, G.V.; BABICHEVA, M.I.; KULMANEN, E.V.; SHIVRIN, O.N.

Dependence of microhardness on loading. Fiz. met. i metalloved. 17 no.2: 234-236 F '64. (MIRA 17:2)

1. Petrozavodskiy gosudarstvenny universitet.

GERMANOV, Ye.P.; SHIVRIN, O.N.

Change in the integral intensity of X-ray reflections of plastically deformed molybdenum in the state of low-temperature relaxation. Kristallografiia 9 no.4:527-530 Jl-Ag '64. (MIRA 17:11)

1. Petrozavodskiy gosudarstvennyy universitet.

SHIVRIN, O.N.; CHUDINOVA, S.A.

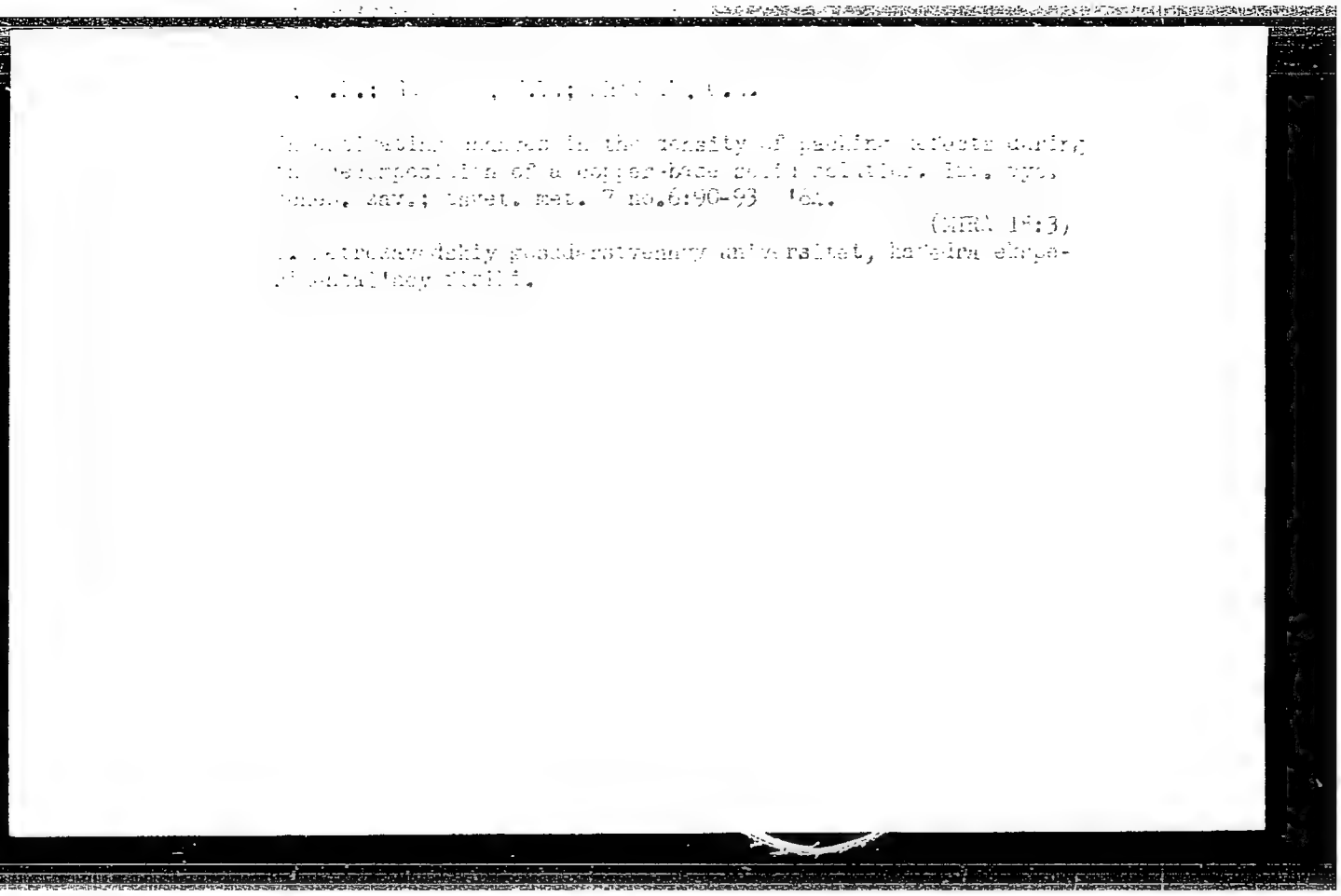
Certain anomalies of the broadening of X-ray interferences from plastically deformed aluminum. Fiz. met. i metalloved. 18 no.4: 525-529 O '64. (MIRA 18:4)

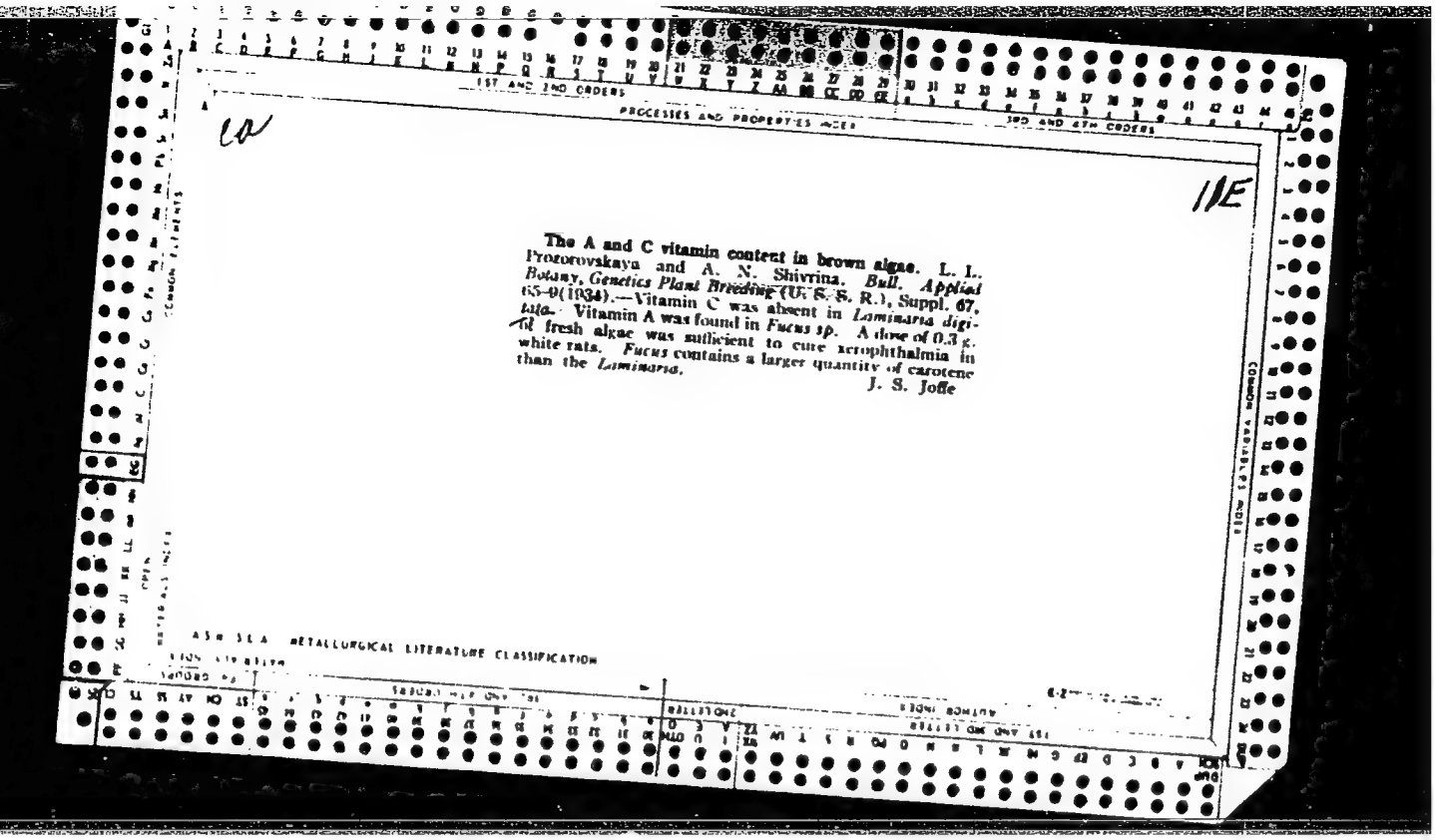
1. Petrozavodskiy gosudarstvennyy universitet imeni Kuusinena.

[redacted], [redacted]; [redacted], [redacted]

Optical connection between polycrystalline mosaic blocks and blurring effects of X-ray interference. Fiz. met. i metalloved. 18 no.6:840-844 D '64. (MIRA 18:3)

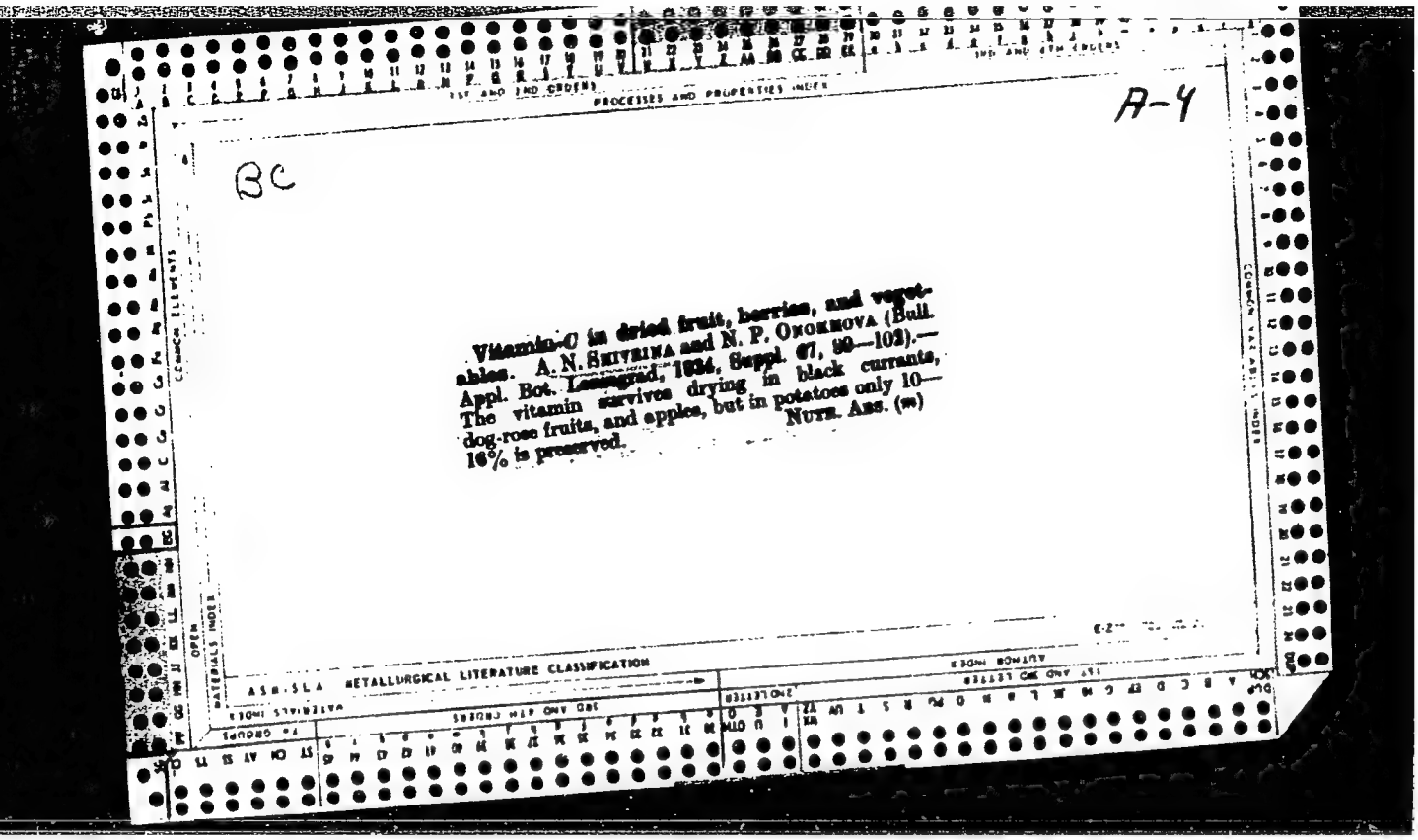
1. Petrozavodskiy gosudarstvennyy universitet imeni Kuusinena.

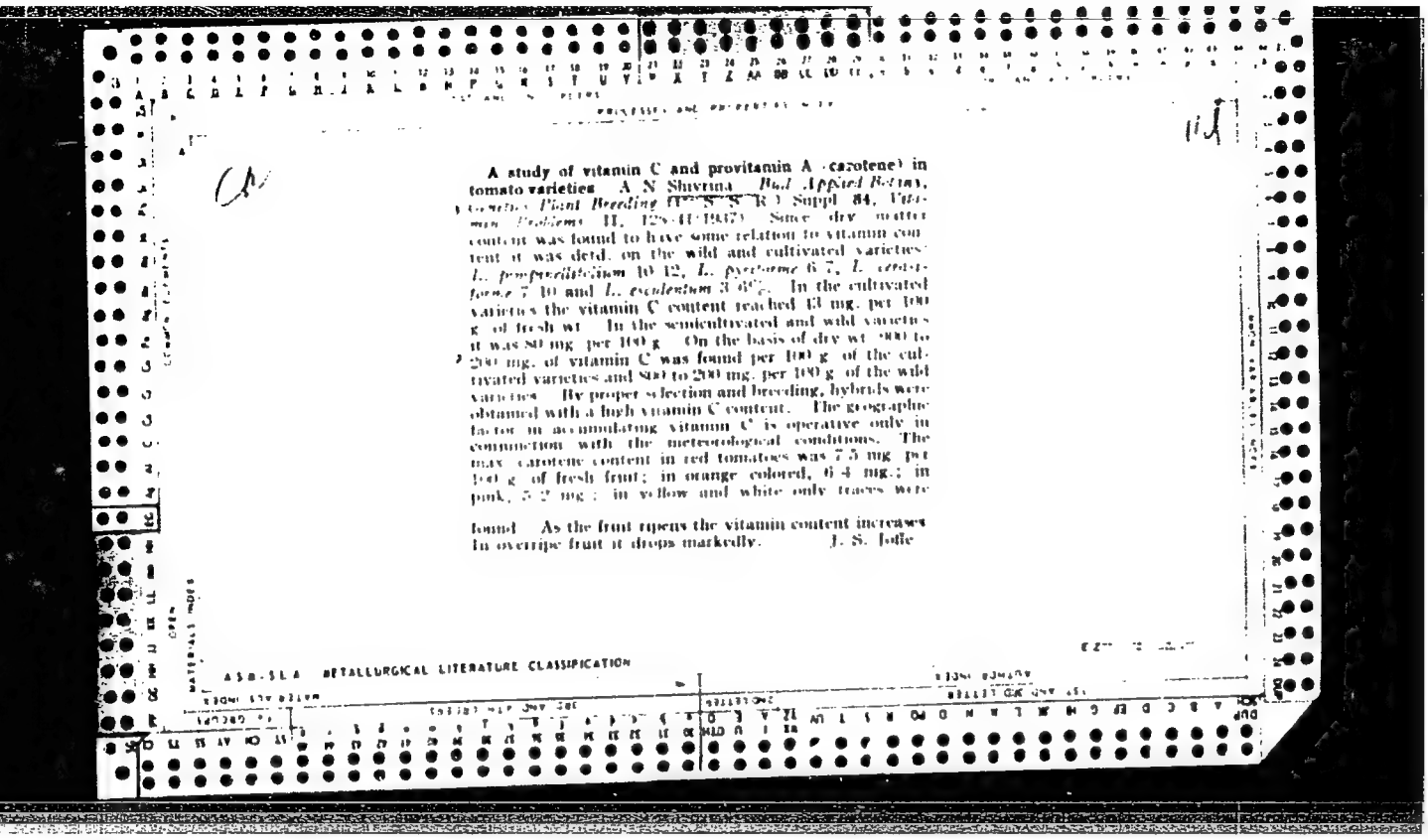




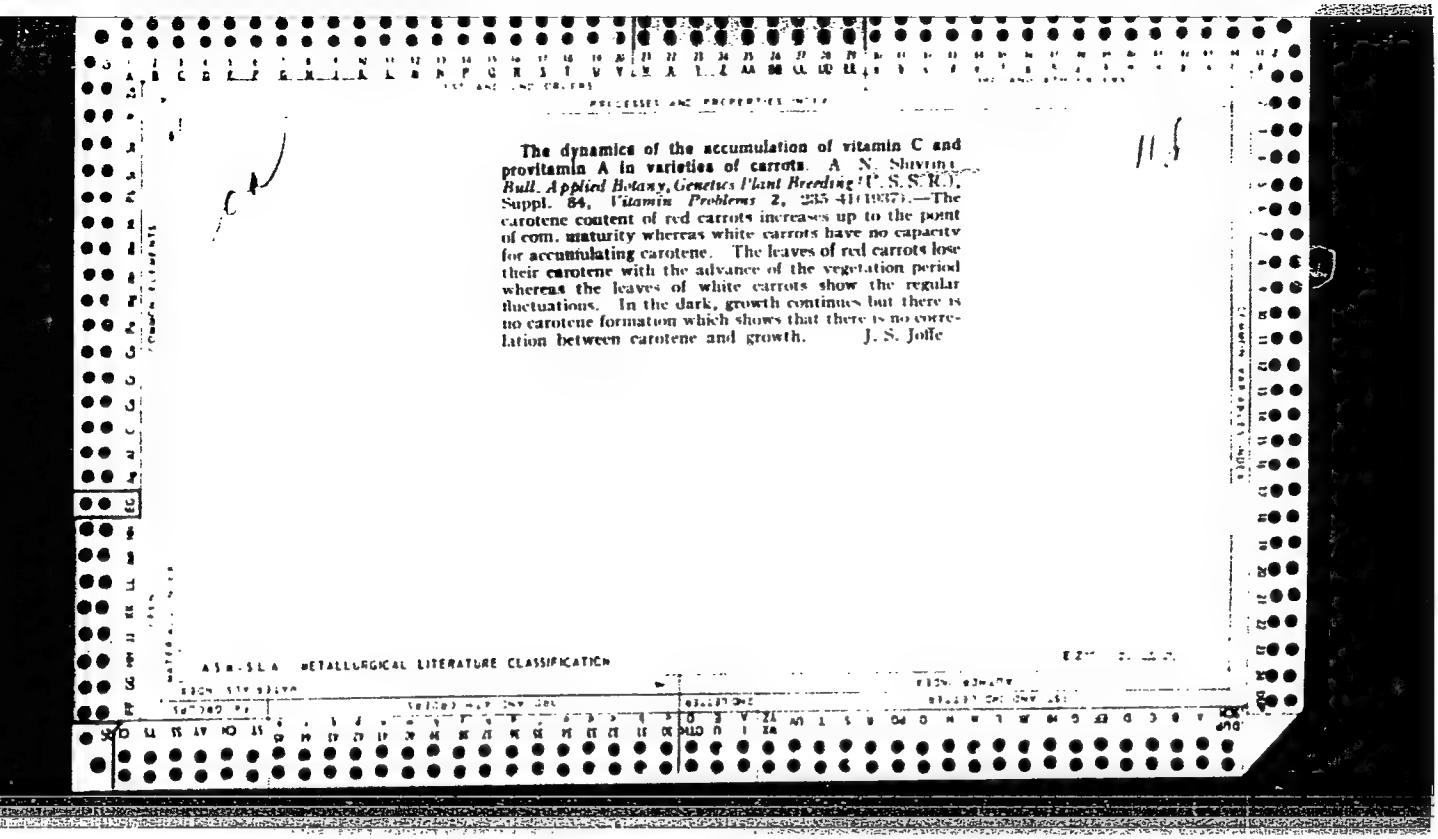
The A and C vitamin content in brown algae. L. I. Prozorovskaya and A. N. Shivrina. *Bull. Applied Botany, Genetics Plant Breeding* (U. S. S. R.), Suppl. 67, 65–9(1934).—Vitamin C was absent in *Laminaria digitata*. Vitamin A was found in *Fucus sp.* A dose of 0.3 g. of fresh algae was sufficient to cure xerophthalmia in white rats. *Fucus* contains a larger quantity of carotene than the *Laminaria*.

J. S. Joffe

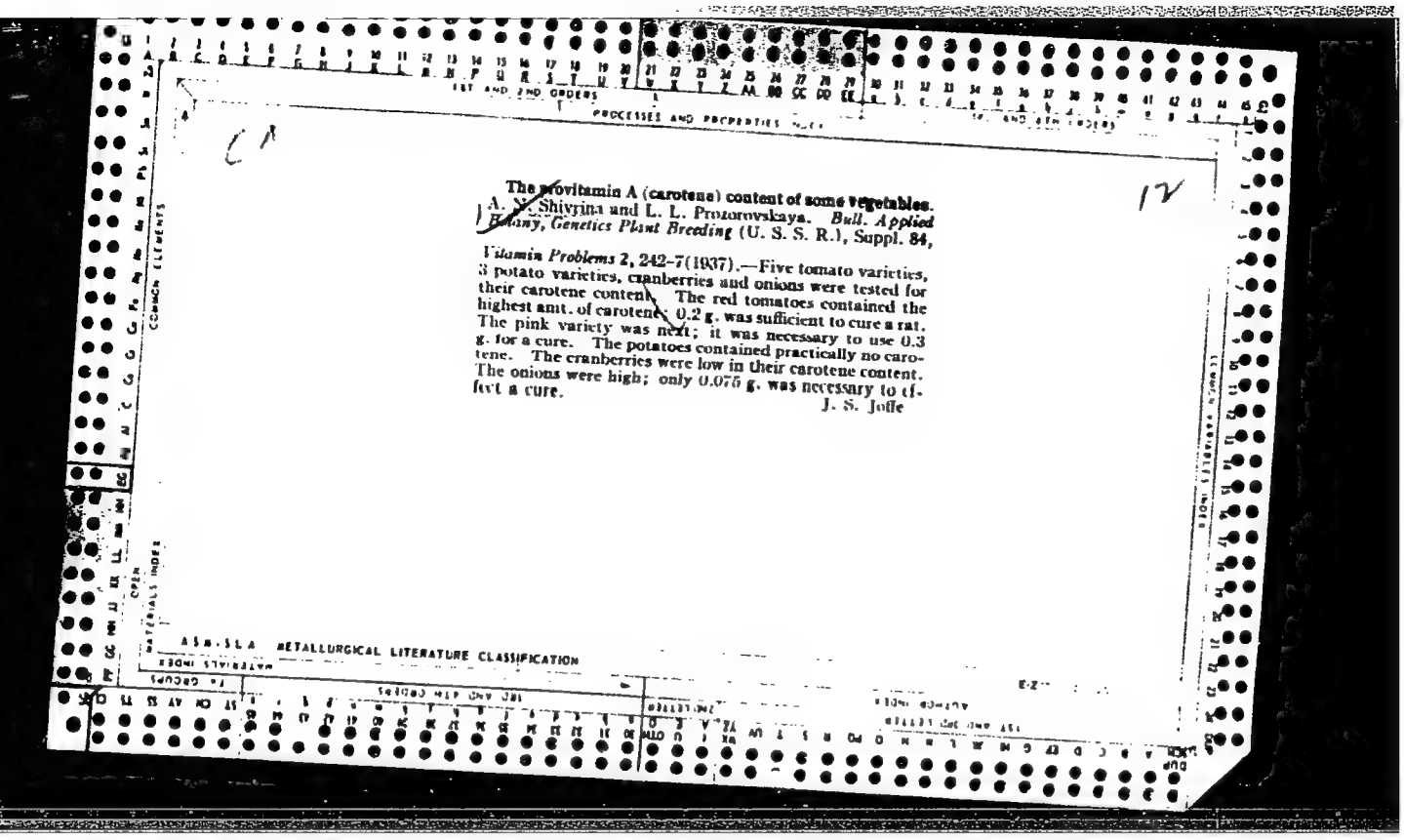




A study of vitamin C and provitamin A (carotene) in tomato varieties. A. N. Sharma. *Bul. Applied Botany, Genetics, Plant Breeding* [illegible] Suppl. 84, *Vitamin Problems* II, 129–41 (1937). Since dry matter content was found to have some relation to vitamin content it was detd. on the wild and cultivated varieties: *L. pimpinellifolium* 10.12, *L. pyriforme* 6.7, *L. cerasiforme* 7.10 and *L. esculentum* 3.6%. In the cultivated varieties the vitamin C content reached 61 mg. per 100 g. of fresh wt. In the semicultivated and wild varieties it was 80 mg. per 100 g. On the basis of dry wt. 900 to 200 mg. of vitamin C was found per 100 g. of the cultivated varieties and 800 to 200 mg. per 100 g. of the wild varieties. By proper selection and breeding, hybrids were obtained with a high vitamin C content. The geographic factor in accumulating vitamin C is operative only in connection with the meteorological conditions. The max. carotene content in red tomatoes was 7.5 mg. per 100 g. of fresh fruit; in orange colored, 6.4 mg.; in pink, 5.2 mg.; in yellow and white only traces were found. As the fruit ripens the vitamin content increases. In overripe fruit it drops markedly. J. S. Joffe

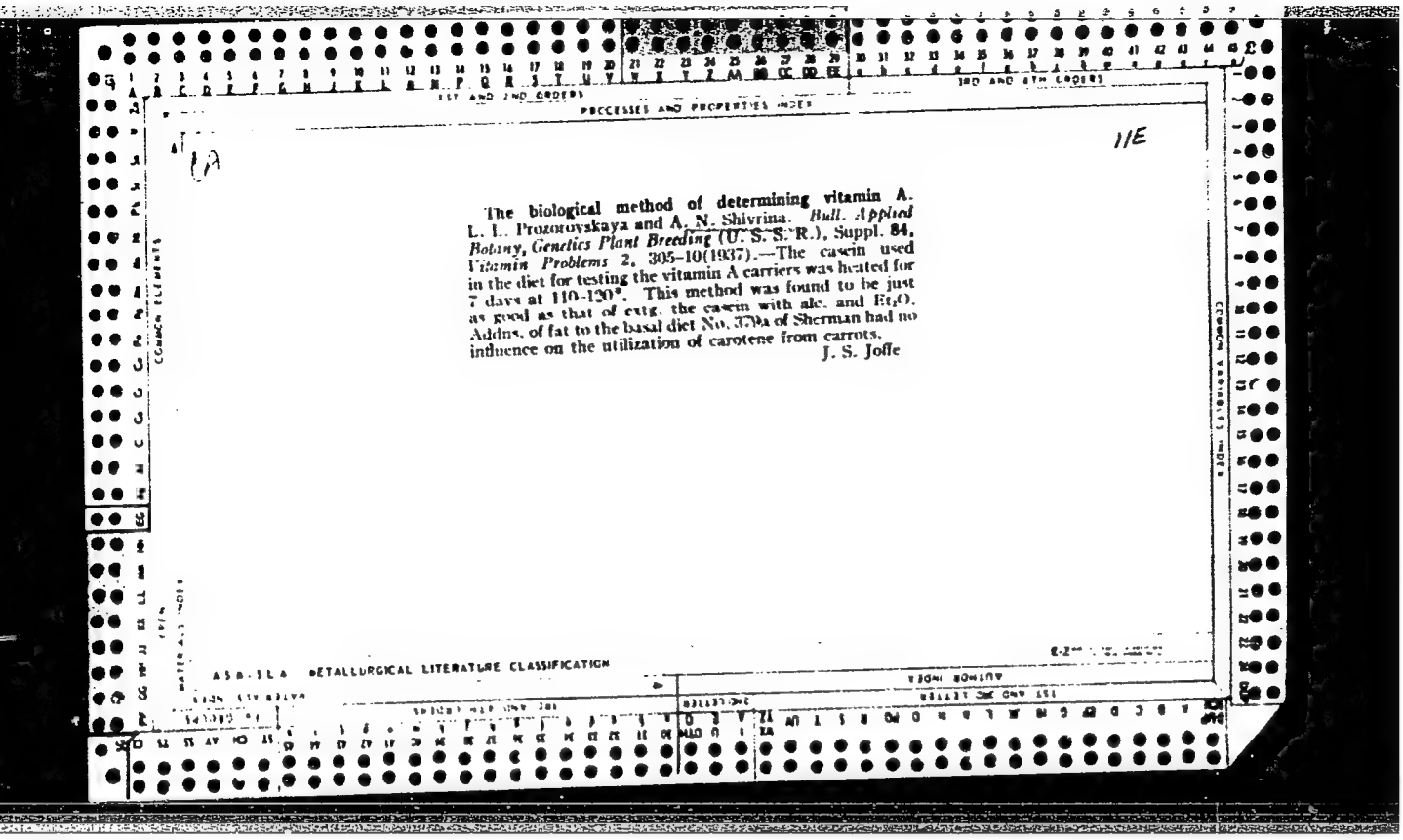


The dynamics of the accumulation of vitamin C and provitamin A in varieties of carrots. A. N. Shuvtsova. *Bull. Applied Botany, Genetics Plant Breeding* (U. S. S. R.), Suppl. 84, *Vitamin Problems* 2, 235-41 (1937).—The carotene content of red carrots increases up to the point of com. maturity whereas white carrots have no capacity for accumulating carotene. The leaves of red carrots lose their carotene with the advance of the vegetation period whereas the leaves of white carrots show the regular fluctuations. In the dark, growth continues but there is no carotene formation which shows that there is no correlation between carotene and growth. J. S. Joffe



The provitamin A (carotene) content of some vegetables. A. V. Shivrina and L. L. Prozorovskaya. *Bull. Applied Botany, Genetics Plant Breeding* (U. S. S. R.), Suppl. 84, *Vitamin Problems* 2, 242–7(1937).—Five tomato varieties, 3 potato varieties, cranberries and onions were tested for their carotene content. The red tomatoes contained the highest amt. of carotene; 0.2 g. was sufficient to cure a rat. The pink variety was next; it was necessary to use 0.3 g. for a cure. The potatoes contained practically no carotene. The cranberries were low in their carotene content. The onions were high; only 0.075 g. was necessary to effect a cure.

J. S. Joffe



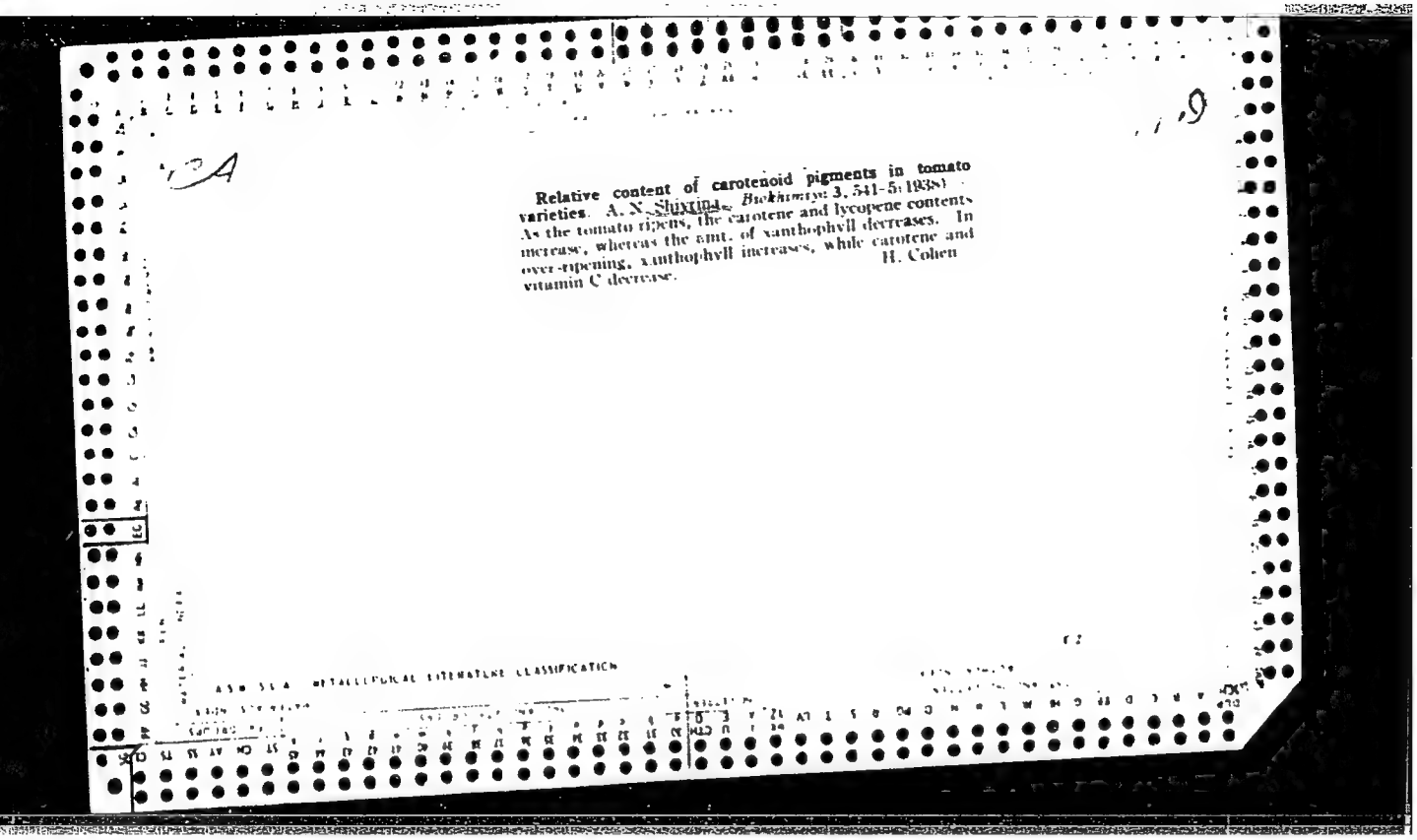
PROCESSES AND PROPERTIES INDEX

11E

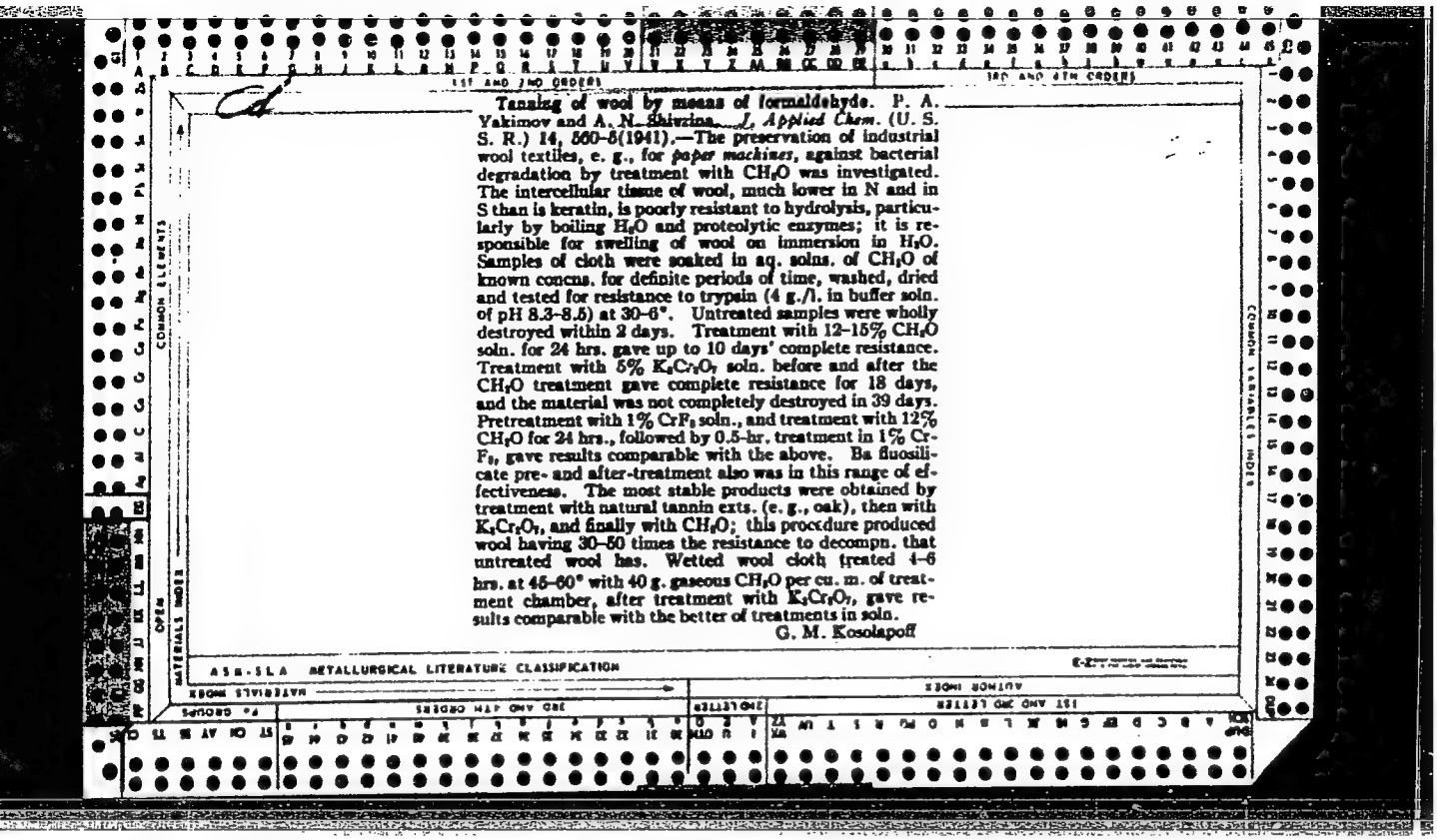
The biological method of determining vitamin A. L. L. Prozorovskaya and A. N. Shivrina. *Bull. Applied Botany, Genetics Plant Breeding* (U. S. S. R.), Suppl. 84, *Vitamin Problems* 2, 305–10(1937).—The casein used in the diet for testing the vitamin A carriers was heated for 7 days at 110–120°. This method was found to be just as good as that of extg. the casein with alc. and Et_2O. Addns. of fat to the basal diet No. 370a of Sherman had no influence on the utilization of carotene from carrots.

J. S. Joffe

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



Relative content of carotenoid pigments in tomato varieties. A. N. Sluiyman. *Biokhimiya* 3, 541-5 (1938). As the tomato ripens, the carotene and lycopene contents increase, whereas the amt. of xanthophyll decreases. In over-ripening, xanthophyll increases, while carotene and vitamin C decrease.
H. Cohen



Tanning of wool by means of formaldehyde. P. A. Yakimov and A. N. Shivzina. *J. Applied Chem.* (U. S. S. R.) 14, 660–8(1941).—The preservation of industrial wool textiles, e. g., for *paper machines*, against bacterial degradation by treatment with CH_2O was investigated. The intercellular tissue of wool, much lower in N and in S than is keratin, is poorly resistant to hydrolysis, particularly by boiling H_2O and proteolytic enzymes; it is responsible for swelling of wool on immersion in H_2O. Samples of cloth were soaked in aq. solns. of CH_2O of known concns. for definite periods of time, washed, dried and tested for resistance to trypsin (4 g./l. in buffer soln. of pH 8.3–8.5) at 30–6°. Untreated samples were wholly destroyed within 2 days. Treatment with 12–15% CH_2O soln. for 24 hrs. gave up to 10 days' complete resistance. Treatment with 5% $K_2Cr_2O_7$ soln. before and after the CH_2O treatment gave complete resistance for 18 days, and the material was not completely destroyed in 39 days. Pretreatment with 1% CrF_3 soln., and treatment with 12% CH_2O for 24 hrs., followed by 0.5-hr. treatment in 1% CrF_3, gave results comparable with the above. Ba fluosilicate pre- and after-treatment also was in this range of effectiveness. The most stable products were obtained by treatment with natural tannin exts. (e. g., oak), then with $K_2Cr_2O_7$, and finally with CH_2O; this procedure produced wool having 30–50 times the resistance to decompn. that untreated wool has. Wetted wool cloth treated 4–6 hrs. at 45–60° with 40 g. gaseous CH_2O per cu. m. of treatment chamber, after treatment with $K_2Cr_2O_7$, gave results comparable with the better of treatments in soln.

G. M. Kosolapoff

SHIVRINA, A.N.

LOVYAGINA, Ye.V.; SHIVRINA, A.N.; PLATONOVA, Ye.G.

Chromatographic analysis of hydrolysates of the active principle of excrescences produced by the pore fungus Inonotus obliquus f. sterili [with summary in English]. Biokhimiia 23 no.1:41-46 Ja-F '58. (MIRA 11:3)

1. Laboratoriya novykh antibiotikov Botanicheskogo instituta im. V.L.Komarova, Leningrad.
(CHROMATOGRAPHIC ANALYSIS) (WOOD-DECAYING FUNGI)

NIZKOVSKAYA, O.P.; MILOVA, N.M.; SHIVRINA, A.N.; LOVYAGINA, Ye.V.; PLATONOVA, Ye.G.

Biology and biochemistry of "chaga," the sterile form of Poria obliqua. Trudy Inst. mikrobiol. no. 6:277-285 '59. (MIRA 13:10)

1. Laboratoriya novykh antibiotikov Botanicheskogo instituta AN SSSR.

(PORIA OBLIQUA)

SHIVRINA, A.N.; LOVYAGINA, Ye.V.; PLATONOVA, Ye.G.

Nature and origin of the water-soluble pigment complex formed by Inonotus obliquus (Pres.) Pil. [with summary in English]. Biokhimiia 24 no.1:67-72 Ja-F '59. (MIRA 12:4)

1. Laboratory of New Antibiotics, the Botanical Insitute, Academy of Sciences of the U.S.S.R., Leningrad.
(FUNGI,
Inonotus obliquus, isolation of water-souble pigment complex (Rus))

SHIVRINA, A.N.; NIZKOVSKAYA, O.P.; LOVYAGINA, Ye.V.; PLATONOVA, Ye.G.; MILOVA, N.M.

Chemical composition of pore fungi at different stages of their development. Bot.zhur. 44 no.12:1724-1727 D '59. (MIRA 13:4)

1. Botanicheskiy institut im. V.L.Komarova Akademii nauk SSSR, Leningrad.
(Mushrooms--Chemical composition)

LOVYAGINA, Ye.V.; SHIVRINA, A.N.; PLATONOVA, Ye.G.

Investigating carbonyl fraction of hydrolysates of a water-soluble pigment complex produced by the polyporaceous fungus Inonotus obliquus. Biokhimiia 25 no.4:640-645 Jl-Ag '60. (MIRA 13:11)

1. Laboratory of Biochemistry of Lower Plants, Botanical Institute, Academy of Sciences of the U.S.S.R., Leningrad.
(MUSHROOMS) (SINAPALDEHYDE)

NIZOVSKAYA, O.P.; SHIVRINA, A.N.; LOVYAGINA, Ye.V.; PLATONOVA, Ye.G.; MILOVA, N.M.

Conditions for the formation of the pigment complex of Inonotus obliquus in artificial cultures. Mikrobiologiia 29 no.3:441-445 My-Je '60. (MIRA 13:7)

1. Botanicheskiy institut im. V.L.Komarova AN SSSR, Leningrad.
(WOOD-STAINING FUNGI)

SHIVRINA, A.N.; LOVYAGINA, Ye.V.; PLATONOVA, Ye.G.

Spectrophotometric characteristics of a crystalline carbonyl compound isolated from the pigment complex of the fungus Inonotus obliquus. Dokl.AN SSSR 132 no.6:1444-1447 Je '60. (MIRA 13:6)

1. Botanicheskiy institut im. V.L.Komarova Akademii nauk SSSR. Predstavleno akademikom A.L. Kursanovym.
(WOOD-DECAYING FUNGI) (CARBONYL COMPOUNDS)

YAKIMOV, P.A., prof., otv. red.; YEFIMENKO, O.M., red.; LOVYAGINA, Ye.V., red.; NIZKOVSKAYA, O.P., red.; SHIVRINA, A.N., red.; BELKINA, M.A., red. izd-va; ZENDEL', M.Ye., tekhn. red.

[Comprehensive study of physiologically active substances of lower plants] Kompleksnoe izuchenie fiziologicheski aktivnykh veshchestv nizshikh rastenii. Moskva, Izd-vo Akad.nauk SSSR, 1961. 279 p. (MIRA 14:12)

1. Akademiya nauk SSSR. Botanicheskiy institut. 2. Laboratoriya biokhimii nizshikh rasteniy Botanicheskogo instituta im. V.L.Komarova AN SSSR (for Yakimov, Yefimenko, Lovyagina, Nizkovskaya, Shivrina).
(Harmones (Plants))

SHIVRINA, A.N.

Chemical and spectrophotometric characteristics of water-soluble huminlike compounds formed by the fungus Inonotus obliquus (Pers.) Pil. Pochvovedenie no.11:51-60 N '62. (MIRA 16:1)

1. Botanicheskiy institut imeni V.A.Komarova.
(Wood-decaying fungi) (Humic substances)

SHIVRINA, A.N.; MASLOVA, R.A.

Amino acid composition of humus-type substances formed by some wood-decaying fungi. Pochvovedenie no.11:63-67 N '63. (MIRA 16:12)

1. Botanicheskiy institut imeni V.L. Komarova.

SHIVRINA, Antonina Nikolayevna; FEDOROV, A.A., ...

[Biologically active substances of higher fungi] Biologicheski aktivnye veshchestva vysshikh gribov. Moskva, Nauka, 1965. 197 p. (MIRA 18:3)

1. Chlen-korrespondent AN SSSR (for Fedorov).

SHIVRINA, A.N.

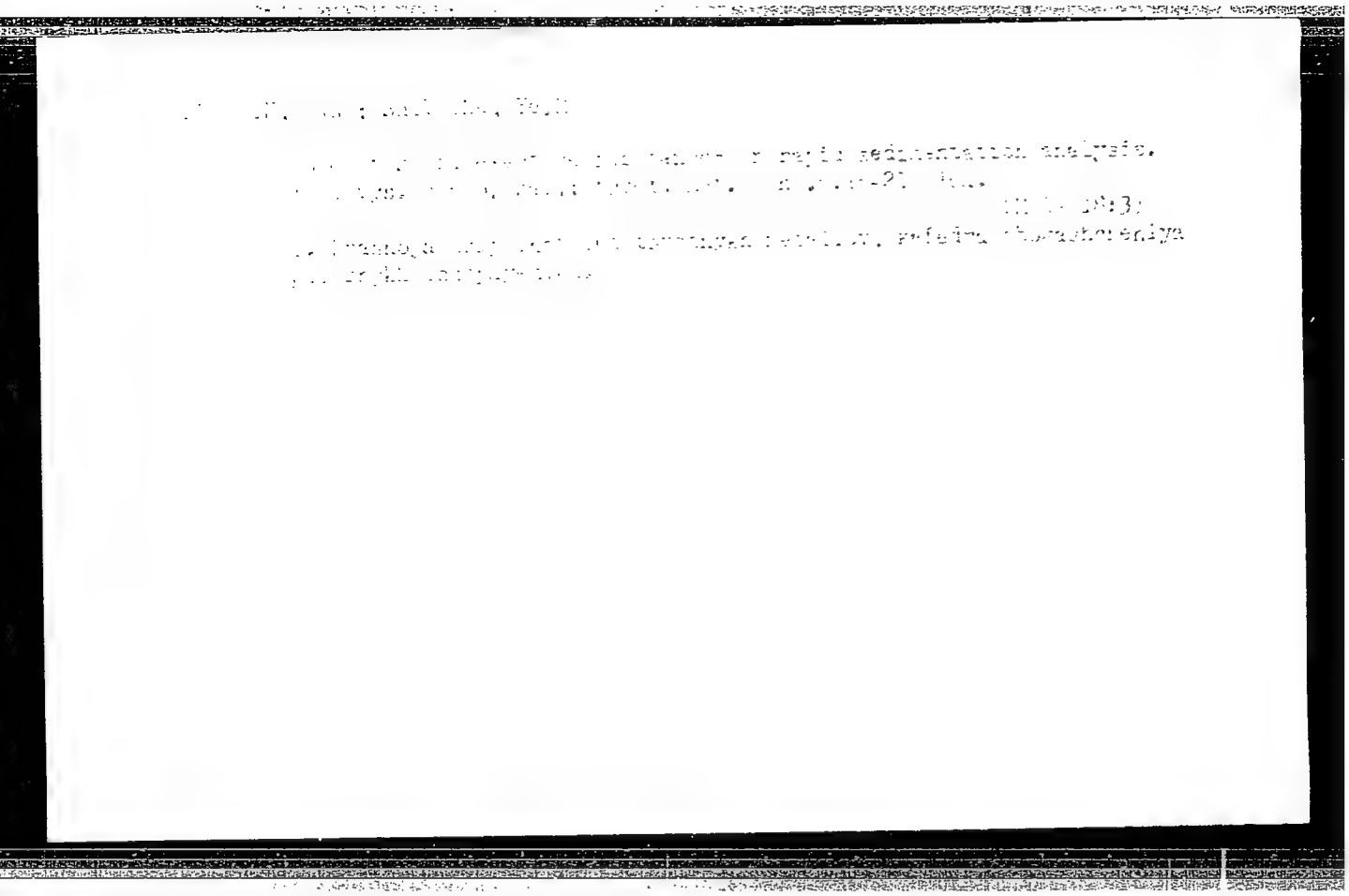
Biologically active compounds in higher fungi. Rast. res. 1 no.1:31-41 '65. (MIRA 18:6)

1. Laboratoriya biokhimii nizshikh rasteniy Botanicheskogo instituta im. V.L. Komarova AN SSSR, Leningrad.

YEFIMENKO, O.M., otv. red.; NIZKOVSKAYA, O.P., red.; SHIVRINA, A.N., red.; YAKIMOV, P.A., red.

[Feed proteins and physiologically active substances for livestock farming; higher fungi as possible sources of their production] Kormovye belki i fiziologicheski aktivnye veshchestva dlia zhivotnovodstva; vysshie griby kak vozmozhnye istochniki ikh polucheniia. Moskva, Nauka, 1965. 126 p. (MIRA 19:1)

1. Akademiya nauk SSSR. Botanicheskiy institut. 2. Laboratoriya biokhimii nizshikh rasteniy Botanicheskogo instituta im. V.L.Komarova AN SSSR (for Yakimov, Shivrina).



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9.1910

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 12, p. 48, # 12267

AUTHORS: Khaykin, S. E., Kaydanovskiy, N. L., Yesepkina, N. A., Shivris, O. N.

TITLE: The Great Pulkovo Radiotelescope

PERIODICAL: Izv. Gl. astron. observ. v Pulkove, 1960, Vol. 21, No. 5, pp. 3-26 (English summary)

TEXT: The authors describe the principle, design and results of investigation of the new mirror radiotelescope for centimeter wavelengths. The radiotelescope has the large surface of the reflector and is characterized by the high resolving power. Some astronomical results obtained by means of this instrument are presented. The reflector of the radiotelescope consists of a number of flat reflecting elements which form a polyhedral surface touching the surface of an elliptic cone. The reflector transforms the plane incident wave into a cylindrical one with a vertical axis. The cylindrical wave is transformed into a spherical one by the second mirror, a parabolic cylinder. The high relative precision of

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The Great Pulkovo Radiotelescope

the dismembered reflecting surface is achieved by the precise arrangement of its individual elements. The axis of the radiotelescope can be installed in any direction by displacements of reflecting elements and irradiator. Geometry of the reflecting surface, special features of the radiotelescope directivity diagram, and kinematics of mechanisms for the positioning of reflecting elements, are considered, and the measured characteristics of the radiotelescope are presented. There are 22 references.

From authors' summary

Translator's note: This is the full translation of the original Russian abstract.

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AUTHORS: Kaydanovskiy, N.L., Ikhsanova, V.N., Apushkinskiy, G.P., Shivris, O.N.

TITLE: Observations of lunar radio emission at a wavelength $\lambda = 2.3$ cm, using the large Pulkovo radiotelescope

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol.4, No.3, pp.428-432

TEXT: It has been shown (Ref.1: V.S.Troitskiy, Astron.zh., 31, 511 (1954)) that measurements of the brightness temperature at the centre of the lunar disc permit an estimate to be made of the equivalent conductivity of the lunar surface material. Such measures, carried out over the course of a lunation, demand great stability of the instrument used. In order to minimize the stability requirements, the antenna temperature was determined indirectly by measuring the displacement (x) of the centre of gravity of the emitted lunar radiation from the geometrical centre of the Moon. Using this method, the amplification coefficient of the system only has to remain constant during the course of one observation. The use of the displacement x is discussed in the

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paper of N.L.Kaydanovskiy and his team (Ref.2: Izv. AN SSSR, M., 1956, p.347). The results there are inaccurate owing to the fact that the lower reflectivity of the Moon, towards the limb, was ignored. The antenna temperature is derived from the displacement in the way which has been described by Troitskiy (Ref.1). Only the first harmonic term is retained in the present paper. The variation of x with the amplitude of the variable component of the brightness temperature at the centre of the disc is thus obtained. The theory of Troitskiy assumes that the Moon's orbit lies in the ecliptic plane and that there is no libration. This approximation is applicable except near new, or full, moon. At these latter times, however, the displacement of the centre of gravity of the lunar radiation is small and, therefore, the deviations can also be ignored at these points. The authors discuss the use of an antenna with a low half-width in one coordinate and a considerably greater half width in the other coordinate (Fig.2). Such an antenna can be used so long as the pattern is elongated parallel to the plane of the Earth-Moon axes, so long as it is trailed in a direction perpendicular to this. Observations of the Moon were made in October-December 1959 at

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Observations of lunar radio ...

λ = 2.3 cm on the large Pulkovo telescope. The angular resolution of the antenna was 2' in one direction and 20' to 1° in the other. The observations were made with the Moon at upper culmination in order to fulfil the conditions mentioned in the previous paragraph. Fig.4 shows the variation of x with lunar phase. $x = 0'.17\ (\omega t - 35°)$, where t is counted from the new Moon. The accuracy of this expression is ± 30%. The amplitude of the variable component at the centre of the lunar disc is, hence, derived as 13.5 ± 4°K. Acknowledgments are expressed to S.E.Khaykin and A.A.Novysh. There are 4 figures and 4 Soviet-bloc references.

ASSOCIATION: Glavnaya astronomicheskaya observatoriya AN SSSR
(Main Astronomical Observatory AS USSR)

SUBMITTED: October 7, 1960

Card 3/4

VLASOV, A.G.; PONOMAREV, V.P.; SHIVYRTALOV, M.T.; SHCHENIN, P.M.

Vacuum systems for electron accelerators. Izv. TPI 122:99-107 '62. (MIRA 17:9)

P/Chemistry Alcohol syntheses Jul 49

"Synthesis and Conversion of Tertiary Aliphatic-Aromatic Alcohols of the Ethylene Series: 1, Synthesis of Methylphenylvinylcarbinol and Methylbenzylvinylcarbinol," A. I. Ivanova, V. A. Shiyakova, Stu, Lab imeni Acad A. Ye Favorskiy, Leningrad Prof of Komin State U imeni A. A. Zhdanov, 6 pp

"Zhur Obshch Khim" V 1 XIX, No 7

Separate action of phenyl magnesium bromide and benzyl magnesium bromide, on methylvinylketone produced, respectively, corresponding tertiary ethylene alcohols (both previously undescribed in literature). In each case a saturated ketone was also produced: benzylacetone and 1-phenylpentanone-4, respectively. Submitted 26 Jan 48.

LA 2/5 T28

SHIYAN, A.A., gornyy inzh.

Mine No.7-7bis fights for the title of enterprise of communist labor. Ugol' 36 no.7:5 Jl '61. (MIRA 15:2)

1. Shakhta No.7-7-bis tresta Artemugol' kombinata Primoskugol'.
(Uglovoye Basin--Coal mines and mining--Labor productivity)

MOTSNYY, A.V.; SHIYAN, F.I.; BAZILEVSKIY, A.R.; VOLOSHINA, N.M.

Treating internal surfaces of ingot molds with a powdered-metal paste. Sbor.rats.predl.vnedr.v proizv. no.5:17 '60. (MIRA 14:5)

1. Yenakiyevskiy metallurgicheskiy zavod.
(Foundries--Equipment and supplies)

SHIYAN, I.V.

Use of diacarb in the treatment of internal diseases. Sov.med. 24 no.3:132-135 Mr '60. (MIRA 14:3)

1. Iz gospital'noy terapevticheskoy kliniki (dir.- deystvitel'nyy chlen AMN SSSR prof. A.L. Myasnikov) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M. Sechenova.
(THIADIAZOLESULFONAMIDE) (HEART FAILURE)
(HYPERTENSION)

SHIYAN, I.V.; LUZKOVA, S.L.; MATVEYEVA, L.S.; ZILOVA, A.N.

Osseous form of xanthomatosis in adults. Klin. med. 38 no. 4:141-145 Ap '60. (MIRA 14:1)

(LIPOIDOSIS)

SHIYAN, I. V., CAND MED SCI, "~~CONDITION~~ State of TONUS AND PERMEABILITY OF VESSELS IN CHRONIC ALCOHOLISM." VITEBSK, 1961. (VITEBSK STATE MED INST). (KL-DV, 11-61, 231).

350

SHIYAN, I. V.

Tonus and permeability of the blood vessels in chronic alcoholism.
Terap. arkh. 33 no.5:32-40 My '61. (MIRA 14:12)

1. Iz fakul'tetskoy terapevticheskoy kliniki (dir. - prof. A. G. Gukasyan) sanitarno-gigiyenicheskogo fakul'teta I Moskovskogo ordena Lenina meditsinskogo instituta imeni I. M. Sechenova.

(ALCOHOLISM) (CAPILLARIES--PERMEABILITY)

AVDUSHEVA, M.P.; VOSTRIKOVA, V.A.; LIPYANSKAYA, R.S.; SHIYAN, K.K.; Prinimali uchastiye: ANTONETS, L.G., nauchnyy sotrudnik; BELENKINA, S.G., nauchnyy sotrudnik; YEVLANOV, V.D., nauchnyy sotrudnik; SHAIN, B.S., nauchnyy sotrudnik; LYCHAGIN, N.S. SKAB, A.D., kand.istor.nauk, red.; VORONINA, V.M., red.; SHEVCHENKO, M.G., tekhn.red.

[History of the Kharkov Locomotive Plant from 1895 to 1917; collected documents and materials] Istoriia Khar'kovskogo parovozostroitel'nogo zavoda, 1895-1917 gg.; sbornik dokumentov i materialov. Khar'kov, Khar'kovskoe obl.izd-vo, 1956. 378 p. (MIRA 14:1)

1. Kharkov. (Province) Gosudarstvennyy arkhiv. 2. Gosudarstvennyy arkhiv Khar'kovskoy oblasti (for Antonets, Belenkina, Yevlanov, Shain). (Kharkov--Locomotives--Construction)

SHIYAN, Kirill Karpovich [Shyian, K.]; NEKRASOVA, L., red.; LYAMKIN, V., tekhn.red.

[Struggle of Ukrainian workers for the restoration of industry, 1921-1925] Borot'ba robitnychoho klasu Ukrainy za vidbudovu promyslovosti, 1921-1925 rr. Kyiv, Derzh.vyd-vo polit.lit-ry URSR, 1959. 302 p. (MIRA 13:2)
(Ukraine--Economic conditions)

SHIYAN, T.S.

Organizing local population labor force for road work. Avt.dor. 19 no.1:19-21 Ja '56. (MLRA 9:5)

1. Zaveduyushchiy Priazovskim rayavtoshosdorom.
(Zaporozh'ye Province--Road construction workers)

PROTASOV, N.F.; STEFANOV, V.Ye.; DEMCHENKO, V.P.; SHIYAN, V.A.; KRISHTAFOVICH , P.D.

Rolling SVP-17 and 27 shapes with a greater incline of the walls. Metallurg 8 no.9:31-34 S '63. (MIRA 16:10)

1. Zavod "Azovstal'."
(Rolling (Metalwork))

PROTASOV, N.F.; STEFANOV, V. Ye.; SHIYAN, V.A.; DEMCHENKO, V.P.; KRISHTAFOVICH, P.D.

Rolling of a No. 16 c'annel by the gradual bending method. Metallurg 9 no.1:27-29 Ja '64 (MIRA 18:1)

1. Zavod "Azovstal'".

FROLASOV, N.F., inzh.; STRAKHOV, V.Ye., inzh.; SHIGIN, V.A., inzh.

Using double-split [illegible] reduction bar webs and flanges in the rolling of lightweight girders. Stal' 25 no.8:834-836 S '65. (MIRA 18:9)

1. Zavod "Azovstal'".

KHAKHALIN, B.D.; SHIYAN, V.G.

Stresses in chills during the centrifugal casting of iron tubes. Lit.proizv. no.11:26-27 N '61. (MIRA 14:10)
(Centrifugal casting) (Thermal stresses)

SHIYAN, V.G.; DAVYDOV, V.A.

Expansion of pipe production from high-strength cast iron.
Metallurg 6 no.11:27-29 N '61. (MIRA 14:11)

1. Ukrainskiy nauchno-issledovatel'skiy trubnyy institut.
(Pipe, Cast iron)